



U.S. Department of Energy
Technical Qualification Program

Emergency Management Topical Area

Study Guide

<p>Section 4.0 Management, Assessment, and Oversight</p>
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May 1996



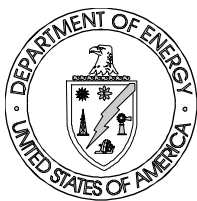
Competency 4.1 Emergency management personnel shall demonstrate a working level knowledge of the development, review, and/or approval of emergency management planning documents.

1. Supporting Knowledge and Skills

- a. Discuss the purpose and function of the emergency management plan implementation procedures.
- b. Explain the relationship between Department of Energy (DOE) Orders, emergency plans, and implementation procedures.
- c. Discuss the expected content of and processes used for the development, review and approval of the following documents:
 - Exercise packages and post-exercise documentation
 - Hazard assessments
 - Self assessments
 - Outside appraisals
 - Exercise corrective action plans
 - Consequence assessment model support documentation
 - Occurrence reports
- d. Discuss the requirements contained in DOE Order 5500.3, Planning and Preparedness for Operational Emergencies and the Emergency Management Guides regarding the development, review, and approval of emergency plans.
- e. Discuss the roles and responsibilities of emergency management personnel as related to the National Contingency Plan (NCP).

2. Self-Study Activities (corresponding to the intent of the above competency)

NOTES: • The DOE Orders are in a state of transition. Please refer to the following gopher site for a cross reference of new and old Orders:
gopher://VM1.HQADMIN.DOE.GOV:70/00/doemenu1/directiv/251cross.asc



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- Below are two web sites containing many of the references you may need.

Web Sites		
Organization	Site Location	Notes
Department of Energy	http://cted.inel.gov/cted/index.html	DOE Standards, Guides, and Orders.
U.S. House of Representatives	http://law.house.gov/cfr.htm	Searchable Code of Federal Regulations

Read DOE Order 5500.1B, *Emergency Management System*, Section 8.b, “Policy.”

EXERCISE 4.1-A Why are appropriate organizations, plans, and implementing procedures used?

Read DOE Order 5500.3A, *Planning and Preparedness for Operational Emergencies*, Section 9.e.

EXERCISE 4.1-B What are emergency management programs based upon?

Read DOE Order 5500.1B, *Emergency Management System*, Section 1. “Purpose;” Section 8.a.(2), “Policy;” and Section 8.b, Policy.”

Read the DOE Emergency Management Guide *Introduction to Emergency Management Guide*, Section 5, “Emergency Management Program Basis.”

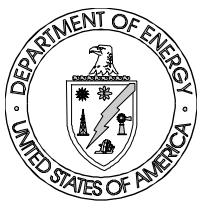
EXERCISE 4.1-C What is the purpose of DOE Order 5500.1B, *Emergency Management System*?

EXERCISE 4.1-D Why is emergency planning used?

EXERCISE 4.1-E Why are procedures used in emergency management plans?

Read the DOE Emergency Management Guide *Drills and Exercises*, Section 4, pages 12 through 14, and Section 8, “Follow-up Activities to Drill/Exercise,” pages 20 and 21.

EXERCISE 4.1-F What do the extent and detail of a drill/exercise package depend upon?



EXERCISE 4.1-G Who is responsible for overseeing the preparation of a report subsequent to each drill/exercise documenting the event and subsequent recommended corrective actions/improvement actions?

Read the DOE Emergency Management Guide *Hazards Assessment*, Appendix III, “Example Application of the Hazards Assessment Method to a Hypothetical DOE Facility,” pages 41 through 72.

EXERCISE 4.1-H Who is responsible for ensuring that the hazards assessment is regularly reviewed and maintained current?

Read the DOE Order 5500.3A, *Planning and Preparedness for Operational Emergencies*, Section 11.c(13)(c), “Drills and Exercises,” and Section 10.b.

EXERCISE 4.1-I Who is responsible for performing management self-assessments of the DOE Emergency Management System(s)?

EXERCISE 4.1-J Who is responsible for performing self-assessments of the DOE office and facility emergency management programs?

EXERCISE 4.1-K How often must internal assessments of the emergency management program be conducted?

Read the DOE Emergency Management Guide *Drills and Exercises*, Section 8.b(1), “Follow-up Activities to the Drill/Exercise.”

EXERCISE 4.1-L Who is responsible for developing the corrective action plan for a drill/exercise?

Read the DOE Emergency Management Guide *Consequence Assessment*, Section 6, “Projection of Potential Consequences,” pages 10 through 12.

EXERCISE 4.1-M Why should methods and models used in consequence projection be documented?

Read DOE Order 5500.3A, *Planning and Preparedness for Operational Emergencies*, Section 12, “Implementing and Scheduling Requirements.”



Read the DOE Emergency Management Guide, *Program Administration*, Section 3.a(2).

EXERCISE 4.1-N Who should coordinate the development of a site emergency plan and procedures?

EXERCISE 4.1-O What are the time limits required by DOE Order 5500.3A for preparation and submission of a plan for implementation of the Order?

Read the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Section 105.

EXERCISE 4.1-P Discuss the roles and responsibilities of emergency management personnel as related to the NCP.

3. Summary

Documentation of emergency management plans, drills, exercises, appraisals, assessments, etc., is a critical part of any emergency management program. It allows for the reconstruction of events by others outside the immediate site and allows for critique and evaluation, lessons-learned studies, improved training, and improved readiness for future events. An approved process for development, review, and approval of these documents allows for standardization across DOE.

4. Exercise Solutions

EXERCISE 4.1-A Why are appropriate organizations, plans, and implementing procedures used?

ANSWER 4.1-A To minimize the consequences of emergencies.

EXERCISE 4.1-B What are emergency management programs based upon?

ANSWER 4.1-B DOE emergency management programs are based on emergency plans, procedures to implement those plans, and other supporting documents.



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EXERCISE 4.1-C What is the purpose of DOE Order 5500.1B, *Emergency Management System*?

ANSWER 4.1-C To establish overall policy and requirements.

EXERCISE 4.1-D Why is emergency planning used?

ANSWER 4.1-D To minimize consequences from incidents involving DOE operations.

EXERCISE 4.1-E Why are procedures used in emergency management plans?

ANSWER 4.1-E Use appropriate implementing procedures to maintain consistency.

EXERCISE 4.1-F What do the extent and detail of a drill/exercise package depend upon?

ANSWER 4.1-F The extent and detail contained in the package are dependent upon the scope and complexity of the particular drill/exercise and vary greatly.

EXERCISE 4.1-G Who is responsible for overseeing the preparation of a report subsequent to each drill/exercise documenting the event and subsequent recommended corrective action/improvement actions?

ANSWER 4.1-G The Emergency Program Manager.

EXERCISE 4.1-H Who is responsible for ensuring that the hazards assessment is regularly reviewed and maintained current?

ANSWER 4.1-H The Operating Contractor Manager of Emergency Planning.

EXERCISE 4.1-I Who is responsible for performing management self-assessments of the DOE Emergency Management System(s)?

ANSWER 4.1-I The Program Senior Official (PSO).



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EXERCISE 4.1-J Who is responsible for performing self-assessments of the DOE Office and facility emergency management programs?

ANSWER 4.1-J The heads of field elements.

EXERCISE 4.1-K How often must internal assessments of the emergency management program be conducted?

ANSWER 4.1-K Annually.

EXERCISE 4.1-L Who is responsible for developing the corrective action plan for a drill/exercise?

ANSWER 4.1-L The Emergency Program Manager should develop an action plan to implement appropriate corrective actions and improvement items for approval.

EXERCISE 4.1-M Why should methods and models used in consequence projection be documented?

ANSWER 4.1-M They should be documented in such a manner that the analysis and the results can be critically reviewed, understood, and, if necessary, reconstructed by independent experts.

EXERCISE 4.1-N Who should coordinate the development of a site emergency plan and procedures?

ANSWER 4.1-N Based on the site hazards assessment, the Emergency Management Program Administrator should coordinate the development, maintenance, and updating of the site emergency plan and implementing procedures.



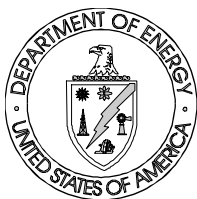
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EXERCISE 4.1-O What are the time limits required by DOE Order 5500.3A for preparation and submission of a plan for implementation of the Order?

ANSWER 4.1-O Within six months of the date of issuance of this Order, PSOs must prepare and submit a plan, through the Director of Emergency Operations (DEO), for Under Secretary approval, that describes how the requirements of this Order shall be met, including schedules, costs, and quality assurance activities for the phased implementation of the provisions of this Order.

EXERCISE 4.1-P Discuss the roles and responsibilities of emergency management personnel as related to the NCP.

ANSWER 4.1-P The National Contingency Plan (NCP) calls for the U.S. Coast Guard or the Environmental Protection Agency to provide an On Site Coordinator (OSC), assisted by a Federal Regional Response Team (RRT), to advise and support local responders.



Competency 4.2 Emergency Management personnel shall demonstrate a working level knowledge of the development, review, and approval process for emergency management documentation.

1. Supporting Knowledge and Skills

- a. Describe the process for review and approval of the following documents:
 - Facility/site hazards assessments
 - Facility emergency plans
 - Site emergency plans
 - Facility/site implementing procedures
- b. Describe the process for developing and submitting corrective action plans in response to evaluation and appraisal findings.
- c. Describe the process for developing, reviewing, submitting, and approving Emergency Readiness Assurance Plans.

2. Self-Study Activities (corresponding to the intent of the above competency)

- NOTES:
- The DOE Orders are in a state of transition. Please refer to the following gopher site for a cross reference of new and old Orders:
gopher://VM1.HQADMIN.DOE.GOV:70/00/doemenu1/directiv/251cross.asc
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U.S. House of Representatives	http://law.house.gov/cfr.htm	Searchable Code of Federal Regulations

Read DOE Order 5500.10, *Emergency Readiness Assurance Program*.

Read DOE Order 5500.3A, *Planning and Preparedness for Operational Emergencies*.

Read the DOE Emergency Management Guide *Emergency Readiness Assurance Plans*.



Read the DOE Emergency Management Guide *Hazards Assessment*.

Read the facility/site hazards assessments, emergency plans, and implementing procedures for your facility and site.

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| EXERCISE 4.2-A | What is the purpose of the ERAP? |
| EXERCISE 4.2-B | What is the planning cycle (span of years) of the ERAP? |
| EXERCISE 4.2-C | At what level of responsibility and authority is the requirement to review contractor compliance and to act as the Federal On-Scene Coordinator for contractor response under the National Oil and Hazardous Substances Pollution Contingency Plan? |
| EXERCISE 4.2-D | What position has the responsibility for preparation of the ERAPs and annual updates? |
| EXERCISE 4.2-E | What is the purpose of emergency readiness assurance appraisals? |
| EXERCISE 4.2-F | How should findings and corrective actions identified in the Emergency Readiness Assurance Appraisals be addressed? |
| EXERCISE 4.2-G | What are the requirements, generally, for emergency management program administration and documentation as stated in DOE Order 5500.3A? |

3. Summary

Emergency management documentation is the auditable evidence that DOE facilities/sites are in compliance with good management practices and the regulatory requirements of emergency management in the DOE system. A well-documented and carefully prepared Emergency Management System will ensure that DOE has a systematic plan for protecting the safety and health of workers and the public, and for protecting property and the environment in the event of an emergency. The emergency management system is to enable the facilities/sites to respond to an emergency in a timely, efficient, and effective manner.



4. Exercise Solutions

EXERCISE 4.2-A What is the purpose of the ERAP?

ANSWER 4.2-A “. . . assuring that the Department of Energy (DOE) Emergency Management System (EMS) is ready to respond promptly, efficiently, and effectively to any emergency involving DOE facilities or requiring DOE assistance.” (DOE Order 5500.10, Section 1).

EXERCISE 4.2-B What is the planning cycle (span of years) of the ERAP?

ANSWER 4.2-B The ERAP covers a five fiscal year period from the initial preparation or the last update and must be updated annually.

EXERCISE 4.2-C At what level of responsibility and authority is the requirement to review contractor compliance and to act as the Federal On-Scene Coordinator for contractor response under the National Oil and Hazardous Substances Pollution Contingency Plan?

ANSWER 4.2-C “This responsibility is at the level of heads of field organizations” (DOE Order 5500.10, Section 8.d).

EXERCISE 4.2-D What position has the responsibility for preparation of the ERAPs and annual updates?

ANSWER 4.2-D “This responsibility is assigned to the Manager/Administrator of each DOE- or contractor-operated facility” (DOE Order 5500.10, Section 8.d.(7)).

EXERCISE 4.2-E What is the purpose of Emergency Readiness Assurance Appraisals?

ANSWER 4.2-E “Appraisals assess the ability of DOE elements and DOE- or contractor-operated facilities to meet applicable requirements of the EMS” (DOE Order 5500.10, Section 10).



EXERCISE 4.2-F How should findings and corrective actions identified in the Emergency Readiness Assurance Appraisals be addressed?

ANSWER 4.2-F “Findings and Corrective Actions: With a focus on major findings, summarize outstanding appraisal findings, citing the corrections assigned as well as those corrective actions validated as resolved during the past fiscal year. Identify the priority for completion and estimated completion dates for correction of open, major findings. Related findings and corrective actions should be consolidated, as much as possible. A verbatim statement of findings and corrective actions from previous reports is not appropriate for an ERAP” (DOE Emergency Management Guide *Emergency Readiness Assurance Plan*, Section D.2.g).

EXERCISE 4.2-G What are the requirements, generally, for emergency management program administration and documentation as stated in DOE Order 5500.3A?

ANSWER 4.2-G Responsibility for the program must be assigned to an individual at each facility subject to DOE Order 5500.3A. “This individual’s responsibilities shall include development and maintenance of the emergency plan, development of the Emergency Readiness Assurance Plan (ERAP) and annual updates, development and conduct of training and exercise programs, coordination of assessment activities, development of related documentation, and coordination of emergency resources” (DOE Order 5500.3A, Section 11.c(13)(a)).

Further, the emergency plan and implementing procedures must be controlled, and distribution documents annually reviewed and updated. “An internal assessment of all aspects of the emergency management program must be conducted annually by persons not directly responsible for administration of the program or response activity being assessed” (DOE Order 5500.3A, Section 11.c(13)(c)).

The emergency plan must describe the provisions for response to an operational emergency and be supported by appropriate procedures. The documentation must include emergency records for review and reconstruction of major communications and actions taken during an emergency, including operator logs and emergency response organization documentation. The details required are provided in DOE Order 5500.3A, Section 11.d.



Competency 4.3 Emergency Management personnel shall demonstrate a working level knowledge of the process for planning, conducting, and evaluating emergency response exercises.

1. Supporting Knowledge and Skills

- a. Describe the process for planning emergency response exercises.
- b. Describe the process for conducting an emergency response exercise, including the "players" and "controllers" organizations and the opportunity for post-event critiques.
- c. Describe the process for internal and external evaluation of emergency response exercises, including the development or response to findings.
- d. Perform one of the following activities related to emergency drills, exercises, or events:
 - In accordance with the Emergency Management Guides, act as an evaluator or exercise controller during an exercise.
 - Serve as a member of a drill/exercise planning group.
 - Serve as a member of a scenario development group for an annual exercise.
 - Lead a drill/exercise post event critique.
 - Lead the development of and present the formal management critique as identified in the Emergency Management Guides.
 - Coordinate the writing of an exercise final report responding to objectives that were both met and not met as identified in the Emergency Management Guides.

2. Self-Study Activities (corresponding to the intent of the above competency)

NOTE: • Below are two web sites containing many of the references you may need.

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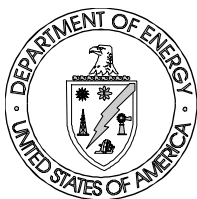
Read the U.S. Department of Energy *Emergency Operations Drill or Exercise Evaluator Manual*, pages 1 through 47.

Read the U.S. Department of Energy *Guidance for Emergency Response Drills and Exercises*, pages 1 through 21.

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| EXERCISE 4.3-A | Develop a simple matrix outlining the steps and describing the process for planning emergency response exercises. |
| EXERCISE 4.3-B | What are the roles of the exercise coordinator, controllers, evaluators, players, and observers during an emergency response exercise? |
| EXERCISE 4.3-C | Briefly describe the elements of a full-participation exercise package. |
| EXERCISE 4.3-D | What is the time frame required for approval of an exercise package by DOE Headquarters (HQ)? Who approves it? |
| EXERCISE 4.3-E | How should scenario information, data, and evidence be presented to the players during an emergency response exercise? |
| EXERCISE 4.3-F | How should the controller proceed if the player(s) “defeat” the scenario (or scenario components) prematurely? |
| EXERCISE 4.3-G | Explain the purpose of the post-exercise critique and identify the key points covered. |
| EXERCISE 4.3-H | Who attends the management critique, and what is addressed in this session? |

3. Summary

Drills and exercises are key elements of DOE emergency management programs. Drills provide hands-on training for specific aspects of facility operation or emergency response. Exercises are the means by which the integrated, overall emergency response capability identified in emergency plans is demonstrated and evaluated.



An exercise is a comprehensive performance test of the integrated capability of most aspects in the site/facility emergency management program. Exercises test the adequacy and effectiveness of the following elements:

- Organizational command and control
- Implementation procedures
- Notification and communication networks
- Emergency equipment
- Response organization personnel performance
- The overall emergency response program performance

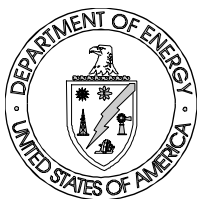
Exercises must be designed and conducted for maximum realism and attempt to duplicate the sense of stress inherent in an actual emergency situation.

4. Exercise Solutions

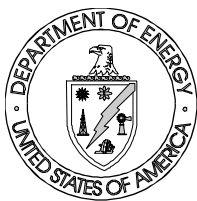
EXERCISE 4.3-A Develop a simple matrix outlining the steps and describing the process for planning emergency response exercises.

ANSWER 4.3-A The following table offers an overall planning process:

The Planning Process for Emergency Response Exercises	
Step	Description
Develop and annually update an ERAP to cover a five-fiscal-year period in accordance with DOE Order 5500.10.	<p>Five-year (long-range) planning includes the following:</p> <ul style="list-style-type: none">• General schedule, scope, and objectives of drills and exercises over the multiyear period• Provisions for demonstrating all aspects of the emergency program in a logical manner• Provisions for drills with sufficient scope and frequency to ensure the training and maintenance of proficiency of emergency response personnel. <p>Fiscal-year (short-range) planning includes the following:</p> <ul style="list-style-type: none">• Scope, specific objectives, identification of participants, and a schedule of the major tasks and activities associated with the current year's exercises and drills• Confirmation or modification of the planned scope, development of detailed objectives, commitment of participants and resources, and identification and scheduling of the various activities



The Planning Process for Emergency Response Exercises	
Step	Description
Determine the scope, objectives, and participants of the exercise.	Identify specific predetermined objectives associated with the testing of all elements of the emergency management program. <ul style="list-style-type: none">Participants consist of players, controllers, evaluators, and observers.
Establish safety and scenario development guidelines.	The safety of personnel and the facility is paramount during exercises. All participants must comply with standard safety rules and practices.
Identify budget requirements.	Resources are committed in the fiscal-year (short-term) plan.
Develop and review the scenario.	Development of an exercise is an iterative process involving several steps: <ol style="list-style-type: none">The initial step is development of general scenario guidelines by the exercise planning group as part of the planning process. These guidelines should address issues of exercise scope and duration, participants, objectives, administrative and logistic considerations, and operational or technical constraints.The next step is development of a scenario outline by the exercise coordinator and several of the more experienced members of the scenario development group. The outline should be a sequential listing of the key operational, technical, and logistic events comprising the scenario and the approximate timing of these events.Subsequent steps involve refinement of the time line of key events, development of the detailed scenario information, and preparation of the injects or specific exercise messages and data.
Arrange logistics support and organize/schedule administrative activities.	The planning and management of exercises should include provisions for adequate logistics support, with specific attention directed toward arrangements for transportation, food, shelter, medical care, and equipment and materials that are not readily available.



EXERCISE 4.3-B What are the roles of the exercise coordinator, controllers, evaluators, players, and observers during an emergency response exercise?

ANSWER 4.3-B

Roles During an Emergency Response Exercise	
Position	Description
Exercise Coordinator	Is responsible for the safe conduct, coordination, continuity, evaluation, and critique of the drill or exercise
Controllers	<ul style="list-style-type: none">• Facilitate the conduct of the exercise by providing scenario information to players• Allow freedom of player decisions• Preclude player decisions and control actions that may compromise the safety or security of the facility, personnel, or equipment
Evaluators	Observe, evaluate, and document the performance of the players and the activities within their areas of responsibility.
Players	Respond during the drill or exercise in accordance with operational procedures and/or emergency plan implementing procedures as if the exercise information is real.
Observers	Appear to be nonparticipants to the players. Observers should not contribute information or opinions to players in any fashion.

EXERCISE 4.3-C Briefly describe the elements of a full-participation exercise package.

ANSWER 4.3-C The exercise package should include the following information:

- Scope and purpose
- Specific objectives to be demonstrated
- Participants: players, controllers, evaluators, and observers
- Safety and security information, including criteria for exercise termination
- Administrative and logistics information, such as a schedule of activities, a method for identification of the participants, identification of organizations and activities to be simulated, provisions for telephone/radio communication among controllers, and special arrangements for food and transportation
- Rules of conduct for players and observers



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- Detailed instructions for controllers and evaluators
- Evaluation criteria
- Narrative summary of the scenario events (to include initial facility conditions and assumptions used to develop the scenario data)
- Time line of key scenario events and anticipated response actions
- Master scenario events list (MSEL) of scenario messages for dissemination to the players and corresponding time-specific information for the controllers/evaluators
- Maps, diagrams, schematics, and/or data tables that provide scenario information additional to the messages
- Glossary of acronyms

EXERCISE 4.3-D What is the time frame required for approval of an exercise package by DOE HQ? Who approves it?

ANSWER 4.3-D The exercise package must be submitted 45 days in advance of the exercise. The DEO approves the exercise package.

EXERCISE 4.3-E How should scenario information, data, and evidence be presented to the players during an emergency response exercise?

ANSWER 4.3-E Scenario information, data, and evidence should be presented to the players as it would be found, measured, or indicated, with a maximum of realism. For authenticity, and wherever possible, data sheets, recorder charts, and instrument output information should be provided in the scenario. Liquids, solids, and other “stage” props should be used to provide visual evidence as appropriate. If possible, the event should appear to the players as if it is actually occurring.

EXERCISE 4.3-F How should the controller proceed if the player(s) “defeat” the scenario (or scenario components) prematurely?

ANSWER 4.3-F The controller should have a contingency message or “inject” in the event that this occurs. The controller should disallow player actions if it will impact the objective of the exercise.



EXERCISE 4.3-G Explain the purpose of the post-exercise critique and identify the key points covered.

ANSWER 4.3-G The purpose of a critique is to provide a forum in which all aspects (positive and negative) of the exercise are discussed among the participants, which results in identification of “lessons learned” for improving the capability for response to an emergency.

Critiques should include the following:

- A review of scenario events
- Identification of shortcomings in the scenario or drill/exercise conduct
- Analysis of expected and actual player actions
- Assessment of player performance
- Adequacy of procedures and other documentation
- Adequacy of facilities and equipment

EXERCISE 4.3-H Who attends the management critique, and what is addressed in this session?

ANSWER 4.3-H The management-level critique should be attended by site management and all key players, including the controllers and evaluators. This session covers overall performance, strengths, deficiencies, and recommended improvements. Deficiencies, weaknesses, and improvement items should be documented to facilitate tracking and resolution of issues and changes to the emergency management program.